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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,552	10/14/2003	Rajiv Pethe	014116-82.00US	4941

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EXAMINER	
MARKHAM, WESLEY D	
ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

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Office Action Summary	**Application No.** 10/685,552	**Applicant(s)** PETHE ET AL.	
	Examiner Wesley D Markham	**Art Unit** 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *3 and 4* is/are allowed.

6)☒ Claim(s) *1* is/are rejected.

7)☒ Claim(s) *2* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/14/03*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1 – 4 are currently pending in U.S. Application Serial No. 10/685,552, and an Office Action on the merits follows.

Information Disclosure Statement

2. The IDS filed by the applicant on 10/14/2003 is acknowledged, and the references listed thereon have been considered by the examiner as indicated on the attached copy of the PTO/SB/08 form.

Oath/Declaration

3. The examiner notes that the post office addresses and residences of each of the inventors in the instant application were not provided in the declaration. However, such information was provided in an application data sheet filed by the applicant.

Drawings

4. The formal drawings (2 sheets, 3 figures) filed by the applicant on 10/14/2003 have been received by the Office.
5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "9", "13", "20", "22", "24", and "101" in Figure 3. Additionally, reference numbers "3", "5", "12", "14", "16", and "18" in Figure 3 do not appear to correspond to either the reference numbers used in Figure 1 or to the reference numbers described in the

specification of the instant application. Further, reference number "12" in Figure 3 appears to refer to two different elements/structures in the figure. Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office Action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office Action. The objection to the drawings will not be held in abeyance. The examiner notes that any amendment to either the drawings or the specification must not contain "new matter" (see 35 U.S.C. 132).

Specification

6. The disclosure is objected to because of the following informalities:
   - Page 3: Figure 3 is not described in the "Brief Description of the Drawings" section of the application. The examiner further notes that Figure 3 does not appear to be described at all in the specification of the instant application.
   - Paragraphs [0006], [0021], [0022], [0031], and [0034]: The use of the trademarks MYLAR, TL-205, AU1033, E7, AU-1033, SILWET L-7608, SILWET 7650, SILWET 7680, R-967, R-960, R-9649, ST-50, and ST-C has

been noted in this application. They should be capitalized wherever they appear and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

- Paragraph [0010]: The U.S. Patent Application Serial No. corresponding to the "Method for fabricating electro-optic light modulator" application is missing and should be added by the applicant once such Serial No. becomes available.
- Paragraph [0017], line 1: The phrase "a," appears to be a typographical error and should read, "a".
- Paragraph [0018]: The phrase, "(SiO_2 " appears to be a typographical error and should read, "(SiO_2)".

Appropriate correction is required.

Claim Observations

7. The examiner notes that the term/limitation "high vacuum" in independent Claims 1 and 3 is sufficiently definite and has been reasonably interpreted to require a degree of vacuum conventionally utilized in physical vapor deposition (PVD) processes, as described by the applicant in the instant application. The exact pressure of the "high vacuum" would, of course, be dependent on the specific PVD process utilized.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Konuma et al. (USPN 5,357,356) in view of Beitinger et al. (US 2002/0130033 A1), Rukavina et al. (USPN 6,110,327), and Ohno et al. (USPN 4,975,168).

11. Regarding **Claim 1**, Konuma et al. teaches a method for directly coating a "volatile gelatinous material", specifically a polymer dispersed liquid crystal (PDLC) material, the method comprising applying a layer of PDLC ("volatile gelatinous material") onto a substrate having provided thereon a first electrode, and then coating the PDLC layer with a second electrode material (i.e., an "intended material") such as ITO by

sputtering (i.e., a PVD process) (Abstract, Figure 1, Col.1, lines 7 – 44, Col.2, lines 47 – 62, Col.4, lines 54 – 68, and especially the embodiment disclosed in Col.7, lines 38 – 61). Konuma et al. does not explicitly teach (1) applying a stress absorbing polymeric layer of adhesive material to the surface of the volatile gelatinous material (i.e., the PDLC) and allowing it to cure as a coated substrate prior to performing the sputtering process, and (2) imposing a high vacuum upon the coated substrate. However, Beitinger et al. teaches that it was known in the art at the time of the applicant's invention that liquid crystal polymeric materials have difficulty adhering to other materials (paragraph [0004]). Rukavina et al. teaches a primer for adhering an electroconductive metal oxide coating such as ITO to a plastic substrate (Abstract, Col.1, lines 22 – 36, Col.2, lines 15 – 20). The primer is a polyurethane material that has good adhesion to the substrate and to the metal oxide coating, reduces the effects of stress on the metal oxide coating, and is deposited by applying the primer composition to the substrate and subsequently curing the primer layer (i.e., the primer is a stress absorbing polymeric layer of adhesive material that is applied to the desired surface and allowed to cure to become a coated substrate, as required by Claim 1) (Col.2, lines 21 – 35, Col.3, lines 38 – 50, and Col.9, lines 22 – 50). Importantly, Rukavina et al. teaches that the primer is particularly useful to adhere a subsequent coating of sputtered ITO, a situation analogous to that of Konuma et al.'s (Col.11, lines 10 – 25). The primer of Rukavina et al. provides the following advantages: (1) reduces the effects of stress on the electroconductive metal oxide coating, (2) provides good adhesion to the metal oxide coating without undesirable distortion of light, and (3) provides good solvent resistance (Col.2, lines 25 – 47, Col.3, lines 38 – 67, Col.4, lines 1 – 26, Col.9, lines 45 – 50, and Col.10, lines 49 – 51). Therefore, it would have been obvious to one of ordinary skill in the art to apply a stress absorbing polymeric layer of adhesive material (i.e., the primer of Rukavina et al.) to the surface of the volatile gelatinous material (i.e., the PDLC) and allow it to cure as a coated substrate prior to performing the conductive electrode / ITO sputtering process in the process of Konuma et al. with the reasonable expectation of successfully and advantageously obtaining the following benefits: (1) reducing the effects of stress on the electroconductive metal oxide (ITO) coating, (2) providing good adhesion to the sputtered metal oxide coating without undesirable distortion of light, and (3) providing good solvent resistance. Konuma et al. does not explicitly teach imposing a “high vacuum” upon the coated substrate. However, as set forth in the discussion above, the process of Konuma et al. involves sputter-depositing a conductive ITO electrode. Ohno et al. teaches that sputter-depositing a transparent conductive film such as ITO is performed with the substrate subjected to a high vacuum (Col.1, lines 8 – 15, Col.6, lines 3 – 54). Therefore, it would have been obvious to one of ordinary skill in the art to perform the sputtering process of Konuma et al. while the coated substrate is subjected to a high vacuum because a high vacuum is conventionally utilized in an ITO sputtering process, as evidenced by Ohno et al. Put another way, Ohno et al. teaches an operable pressure (i.e., a high vacuum pressure) for sputter-depositing an ITO film, and therefore it would have been obvious to use such operable high-vacuum pressure in the ITO sputtering process of Konuma et al. with the expectation of successfully and advantageously accomplishing the objective of Konuma et al. (i.e., sputtering to deposit an electroconductive ITO film).

Allowable Subject Matter

12. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 3 and 4 are allowed.

13. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record, alone or in combination, does not teach or reasonably suggest performing the applicant's claimed process of directly coating a volatile gelatinous material (e.g., a polymer dispersed liquid crystal (PDLC) material) in a high vacuum (i.e., by applying a layer of such material onto a substrate, applying a stress absorbing polymeric layer of adhesive material to the surface of the gelatinous/PDLC material, and coating the stress absorbing polymeric layer by PVD), wherein the PVD coating is a plurality of layers of dielectric material forming a mirror or dielectric layers formed in pairs of low and high index of refraction materials.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yang (US 2002/0155280 A1) teaches etching a liquid crystal polymer substrate in order to improve the adhesion of the substrate to a subsequently sputtered metal layer. Henley (USPNs 5,465,052 and 5,615,039) teaches electro-optic modulators comprising a sheet of liquid crystal material and a multilayer dielectric reflective mirror disposed on such a sheet. The modulators are used to test LCDs for quality / defects. Kubota et al. (USPN 6,128,056) teaches sputter-depositing an ITO electrode on a PDLC layer in the manufacture of a LCD device (see Figure 28 and the "Tenth Embodiment" on Cols. 44 – 45).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wesley D Markham

WDM

Examiner
Art Unit 1762

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